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## **I. STATUS OF CLAIMS**

Claims 1-42 were pending for examination at the time of the office action.

Claims 5, 13-25, 30, 33 and 36 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. *See Examiner's Office Action*, pp. 8-9 (25 August 2010).

Claims 1-42 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. *See Examiner's Office Action*, pp. 9-13 (25 August 2010).

Claims 1, 3-10, 13 and 15-22, 26-29, 32, 35, and 38 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund et al. (US 2002/0161751 A1) ("Mulgund") in view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" to Madden et al. ("Madden TAG") and further in view of Ahmed (US 2004/0144849 A1) ("Ahmed"). *See Examiner's Office Action*, pp. 13-21 (25 August 2010).

Claims 2, 14, 31, 34, 37 and 39-42 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund and Madden TAG and Ahmed and in further view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. (hereinafter Madden ACQP). *See Examiner's Office Action*, pp. 21-24 (25 August 2010).

Claims 11, 12, 23 and 24 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund and Madden TAG and Ahmed and in further view of Regli et al. (US Patent application No. 2005/0141706 A1). *See Examiner's Office Action*, pp. 24-25 (25 August 2010).

Claims 25, 30, 33 and 36 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Mulgund and Madden TAG and Ahmed and in further view of "A Transmission Control Scheme for Media Access in Sensor Networks" by Alec Woo et al. *See Examiner's Office Action*, pp. 25-29 (25 August 2010).

Claims 1, 4, 5, 13, 15, 18, 23-26, 30, 33 and 36 are amended. Claim 14 is cancelled.

Claims 1-13 and 15-42 remain pending for examination.

## II. ISSUES TO BE REVIEWED

The issues in this response relate to whether the art of record establishes a *prima facie* case of the unpatentability of Applicant's claims. For reasons set forth elsewhere herein, Applicant respectfully asserts that the art of record does not establish a *prima facie* case of the unpatentability of any pending claim.<sup>1</sup> Accordingly, Applicant respectfully requests that Examiner hold all pending claims allowable for at least the reasons described herein, and issue a Notice of Allowance on same.

## III. ARGUMENT: ART OF RECORD DOES NOT ESTABLISH *PRIMA FACIE* CASE OF UNPATENTABILITY IN VIEW OF CITED ART OF RECORD

Applicant respectfully asserts herein that, under the MPEP and legal standards for patentability as set forth below, the art of record does not establish a *prima facie* case of the unpatentability of Applicant's claims at issue. Specifically, Applicant respectfully shows below that the art of record does not recite the text of Applicant's claims at issue, and hence fails to establish a *prima facie* case of unpatentability. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections and hold claims 1-13 and 15-42 to be allowable over the art of record.

### A. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks") and Ahmed (US 2004/0144849 A 1) Do Not Show or Suggest the Text of Independent Claim 1 and Dependent Claims 2-12, 30-32 and 39-42 as Presented Herein; Notice of Allowance of Same Respectfully Requested

#### 1. Independent Claim 1

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<sup>1</sup> Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the Examiner fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. *See, e.g.*, 37 C.F.R. § 10.83 ("A practitioner should represent a client zealously within the bounds of the law."); 37 C.F.R. § 10.84 ("[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part."); and 37 C.F.R. § 10.76 ("A practitioner should represent a client competently."). For these and other reasons, this document notes instances in which the Examiner inadvertently did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the Examiner's behalf.



Independent Claim 1 as presented recites:

“1. A method comprising:  
transmitting with a first mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator** of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” (Emphasis Added)

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 1 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden and/or Ahmed to “teach” at least a portion of the text of Independent Claim 1 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/ combinations of technologies cited by Examiner to meet the recitations of Independent Claim 1 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case<sup>2</sup> of the unpatentability of Independent Claim 1 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 1 and issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 1 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1**

As set forth above, amended Independent Claim 1 recites:

“1. A method comprising:  
[a] transmitting with a first mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes** administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a

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<sup>2</sup> Specifically, *prima facie* is defined as “at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure.” *Black’s Law Dictionary* p. 1189 (6<sup>th</sup> ed. 1990).

second network administrator owned or controlled by a second business entity.”  
(Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 1, Mulgund teaches:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of nodes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not expressly teach that transmitting is done with a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added). In Mulgund, aggregation is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches transmitting with a second mote [child node] at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by programming each node with a TinyOS of Madden and transmitting with a second mote at least a part of an aggregate of one or more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein

different motes sense different types of information (Mulgund, par. [0026]).

Examiner's *Office Action*, pp. 13-15 (25 August 2010)<sup>3</sup>.

As noted, Clause [a] of amended Independent Claim 1 recites “transmitting with a first mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.**” (Emphasis added) It appears to Applicant that Examiner has attempted to map “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” onto “In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” (Ahmed Paragraph [0006]) Applicant notes that Examiner has not yet explained how he would reach this mapping under the broadest reasonable interpretation framework as is Examiner's burden (e.g., such as by examples drawn from Applicant's claims or detailed description),<sup>4</sup> and

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<sup>3</sup> Applicant respectfully asserts that Examiner has apparently not examined the recitations of Applicant's claims, but appears to have ignored the express language of both Applicant's claims and the Examiner-cited technical material. Accordingly, Applicant respectfully maintains that Examiner has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if Examiner had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

<sup>4</sup> Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the Examiner fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. *See, e.g.*, 37 C.F.R. § 10.83 (“A practitioner should represent a client zealously within the bounds of the law.”); 37 C.F.R. § 10.84 (“[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part.”); and 37 C.F.R. § 10.76 (“A practitioner should represent a client competently.”). For these and other

furthermore, Applicant points out that this mapping would appear to disregard at least the “an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.”

In view of the foregoing, Applicant points out that although Independent Claim 1 has been quoted in the present rejection, several claim terms have been disregarded in its analysis. Because Examiner ignored at least the foregoing bolded recitations of Independent Claim 1,<sup>5</sup> under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 1. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

**b) Examiner is Characterizing Mulgund and/or Madden and/or Ahmed to “Teach” the Text of Independent Claim 1, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1**

The Examiner has stated as follows:

“As to claim 1, Mulgund teaches:  
transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of notes at the left side of Fig. 1] (par. [0025] and [0062], wherein “node” and “mote” are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left

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reasons, this document notes instances in which the Examiner inadvertently did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the Examiner’s behalf.

<sup>5</sup> Although Independent Claim 34 has been quoted in the present rejection, several claim terms have been disregarded in its analysis, as shown below.

side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not expressly teach that transmitting is done with a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added). In Mulgund, aggregation is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches transmitting with a second mote [child node] at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by programming each node with a TinyOS of Madden and transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).

Examiner's *Office Action*, pp. 13-15 (25 August 2010)<sup>6</sup>.

Applicant respectfully disagrees and traverses the rejection.

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<sup>6</sup> Applicant respectfully asserts that Examiner has apparently not examined the recitations of Applicant's claims, but appears to have ignored the express language of both Applicant's claims and the Examiner-cited technical material. Accordingly, Applicant respectfully maintains that Examiner has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if Examiner had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

**(1) Examiner Has Put Forth No Evidence  
Supporting His Characterization That  
Mulgund “Teaches” Recitations of  
Independent Claim 1**

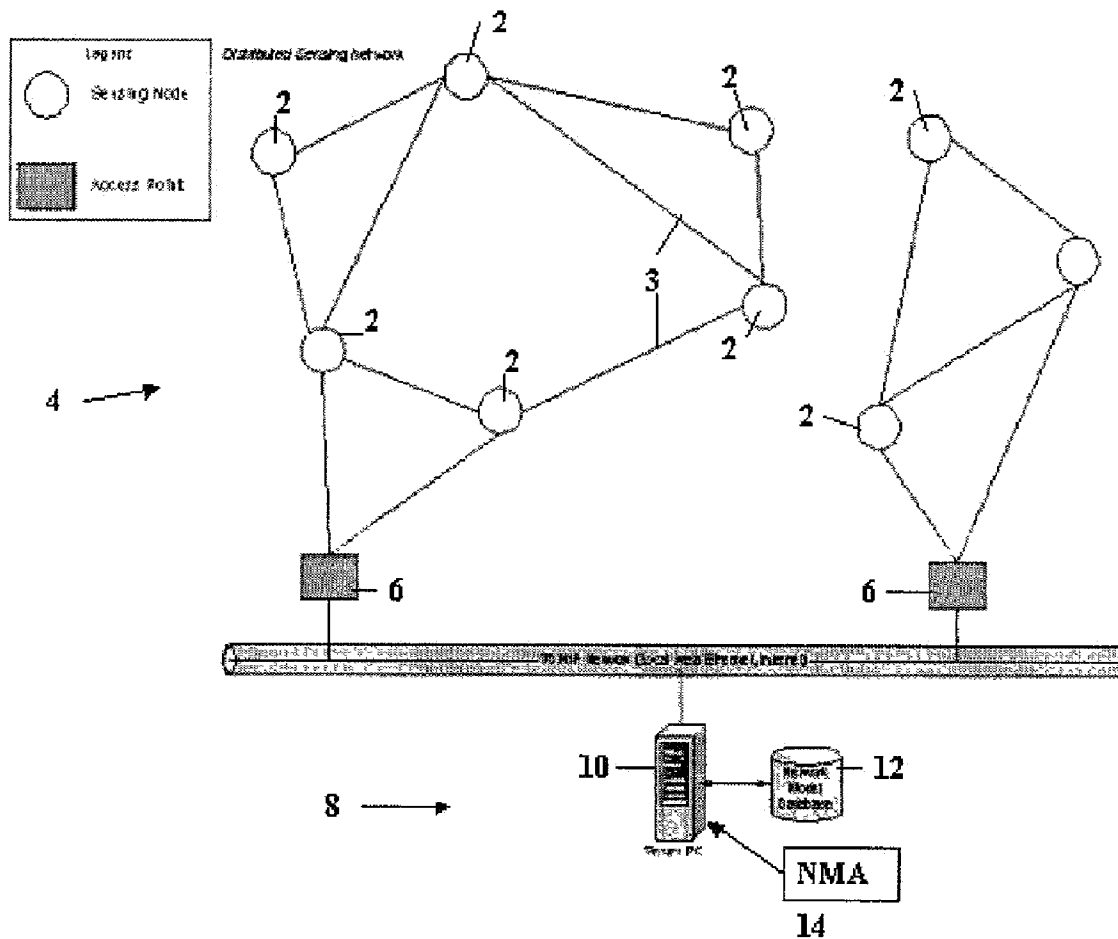
Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund does not recite “aggregate of one or more mote-addressed content indexes of a first set of motes” as recited in Applicant's Independent Claim 1. Rather, the portions of Mulgund cited by Examiner recite as follows:

It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

See *Mulgund* (paragraph [0025]) (Emphasis Added)

The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.

See *Mulgund* (paragraph [0062]) (Emphasis Added)



See *Mulgund* (Fig. 1)

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) *that have one or more sensors 16 providing high-value information connected to it*. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

See *Mulgund* (paragraph [0026]) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Mulgund do not recite the text of at least amended Clause [a] of Independent Claim 1: “aggregate of one or more mote-addressed content indexes of a first set of motes.” (emphasis added) Instead, Mulgund recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (Mulgund Paragraph [0062]) Consequently, on its face, Mulgund does not show the text of at least Clause [a] of amended Independent Claim 1.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 1 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 1 and the Examiner-cited Mulgund reference are very different on their faces. See *supra* at p. 58 (quotation of Claim 1); at pp. 61–63 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 1, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 1 either under the *MPEP* or under controlling legal standards.

Accordingly, insofar as that Mulgund does not recite the text of at least Clause [a] of Applicant’s Independent Claim 1, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [a] of Independent



Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant’s Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [a] of Independent Claim 1. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund are untenable.

Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case<sup>7</sup> of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
“Teaches” Recitations of Independent Claim 1**

As noted above, Examiner has stated as follows:

“As to claim 1, ...

Mulgund does not expressly teach that transmitting is done with a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added). In Mulgund, aggregation is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches transmitting with a second mote [child node] at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually

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<sup>7</sup> Specifically, *prima facie* is defined as “at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure.” *Black’s Law Dictionary* p. 1189 (6<sup>th</sup> ed. 1990).

routed up from children to parents] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by programming each node with a TinyOS of Madden and transmitting with a second mote at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Examiner's *Office Action*, pp. 13-15 (25 August 2010)<sup>8</sup>.

Although Examiner states "Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches transmitting with a second mote [child node] at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents]." Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [a], and accordingly has inadvertently ignored at least the "transmitting with a first mote at least a part of aggregate of one or more mote-addressed content indexes of a first set of motes an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity" recitations of amended Clause [a]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference

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<sup>8</sup> Applicant respectfully asserts that Examiner has apparently not examined the recitations of Applicant's claims, but appears to have ignored the express language of both Applicant's claims and the Examiner-cited technical material. Accordingly, Applicant respectfully maintains that Examiner has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if Examiner had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

identified by Examiner, and so far as Applicant can discern, Madden does not recite “aggregate of one or more mote-addressed content indexes of a first set of motes” and “administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in Clause [a] of Applicant's amended Independent Claim 1. Rather, the textual portions of Madden cited by Examiner actually recite as follows:

We present the Tiny AGgregation (TAG) service for aggregation in low-power, distributed, wireless environments. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various generic properties of aggregates, and show how those properties affect the performance of our in network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault-tolerance of the basic solution.

See *Madden* (Abstract) (Emphasis Added)

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggybacking on the existing ad hoc networking protocol. Sensors route data back towards the user through a routing tree rooted at the basestation. As data flows up this tree, it is aggregated according to an aggregation function and value-based partitioning specified in the query. As an example, consider a query that counts the number of nodes in a network of indeterminate size. First, the request to count is injected into the network. Then, each leaf node in the tree reports a count of 1 to their parent; interior nodes sum the count of their children, add 1 to it, and report that value to their parent. Counts propagate up the tree in this manner, and flow out at the root.

See *Madden* (Section 1.1, Paragraph 2) (Emphasis Added)

Given the simple routing protocol from Section 2.2 and our query model, we now discuss the implementation of the core TAG algorithm for in network aggregation.

A naive implementation of sensor network aggregation would be to use a centralized, server-based approach where all sensor readings are sent to

the base station, which then computes the aggregates. In TAG, however, we compute aggregates in network whenever possible, because, if properly implemented, this approach can be lower in number of message transmissions, latency, and power consumption than the server-based approach. We will measure the advantage of in network aggregation in Section 5 below; first, we present the basic algorithm in detail. We first consider the operation of the basic approach in the absence of grouping; we show how to extend it with grouping in Section 4.2.

See *Madden* (Section 4) (Emphasis Added)

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where the aggregate values are continually routed up from children to parents. Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all devices in the network during that epoch. Given our goal of using as few messages as possible, the collection phase must ensure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

See *Madden* (Section 4.1, Paragraphs 1-2) (Emphasis Added)

Grouping in TAG is functionally equivalent to the GROUP BY clause in SQL: each sensor reading is placed into exactly one group, and groups are partitioned according to an expression over one or more attributes. The basic grouping technique is to push the expression down with the query, ask nodes to choose the group they belong to, and then, as answers flow back, update aggregate values in the appropriate groups.

Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value  $f$ . If it is in a different group, it stores the value of the child's group along with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the node updates the appropriate aggregate. During the next epoch, the node sends the value of all the groups about which it collected information during the previous epoch, combining information

about multiple groups into a single message as long as message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

Recall that queries may contain a HAVING clause, which constrains the set of groups in the final query result. This predicate can sometimes be passed into the network along with the grouping expression. The predicate is only sent if it can potentially be used to reduce the number of messages that must be sent: for example, if the predicate is of the form  $\text{MAX}(\text{attr}) < x$ , then information about groups with  $\text{MAX}(\text{attr}) \geq x$  need not be transmitted up the tree, and so the predicate is sent down into the network.

When a node detects that a group does not satisfy a HAVING clause, it can notify other nodes in the network of this information to suppress transmission and storage of values from that group. Note that HAVING clauses can be pushed down only for monotonic aggregates; non-monotonic aggregates are not amenable to this technique. However, not all HAVING predicates on monotonic aggregates can be pushed down; for example,  $\text{MAX}(\text{attr}) > x$  cannot be applied in the network because a node cannot know that, just because its local value of *attr* is less than  $x$ , the MAX over the entire group is less than  $x$ .

Grouping introduces an additional problem: the number of groups can exceed available storage on any one (nonleaf) device. Our proposed solution is to evict one or more groups from local storage. Once an eviction victim is selected, it is forwarded to the node's parent, which may choose to hold on to the group or continue to forward it up the tree. Notice that a single node may evict several groups in a single epoch (or the same group multiple times, if a bad victim is selected). This is because, once group storage is full, if only one group is evicted at a time, a new eviction decision must be made every time a value representing an unknown or previously evicted group arrives. Because groups can be evicted, the base station at the top of the network may be called upon to combine partial groups to form an accurate aggregate value. Evicting partially computed groups is known as partial *preaggregation*, as described in [15].

Thus, we have shown how to partition sensor readings into a number of groups and properly compute aggregates over those groups, even when the amount of group information exceeds available storage in any one device. We will briefly mention experiments with grouping and group eviction policies in Section 5.2. First, we summarize some of the additional benefits of TAG.

See *Madden* (Section 4.2) (Emphasis Added)

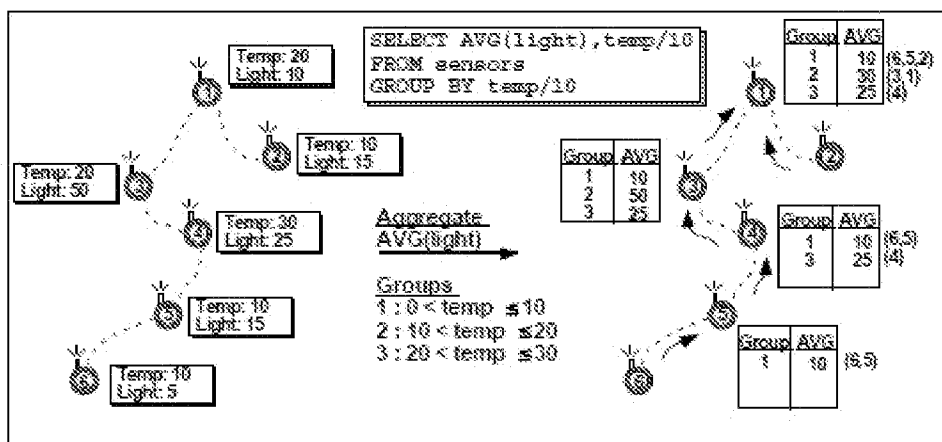


Figure 2: A sensor network (left) with an in network, grouped aggregate applied to it (right). Parenthesized numbers represent nodes that contribute to the average

See Madden (Figure 2)

As can be seen from the foregoing, the Examiner-identified portions of Madden do *not recite* the text of at least Clause [a] of Independent Claim 1: “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.”<sup>9</sup> Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining

<sup>9</sup> This is a portion of the above-identified Clause [a], which recites, “at least one mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, and a sensing functionality.”

value f.” (Madden Section 4.2) Consequently, on its face, Madden does not show the cited text of amended Independent Claim 1.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Madden describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 1 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 1 and the Examiner-cited Madden reference are very different on their faces. See *supra* at p. 18-18 (quotation of Claim 1); at p. 29-32 (quotation of Madden); and at p. 23-24 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 1, and Applicant has noted that Examiner has not yet cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 1 either under the *MPEP* or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of Independent Claim 1: “transmitting with a first mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.”



(Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id.” Consequently, on its face, Madden does not show the text or the emphasized terms of at least Clause [a] of Independent Claim 1.

Accordingly, insofar as that Madden does not recite the text of Clause [a] of Applicant’s Independent Claim 1, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [a] of amended Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant’s Claim 1, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Madden “teaches.” Examiner speaks of “transmitting with a second mote [child node]” of Madden allegedly where [set of parent nodes excludes a child node].” Examiner’s Office Action, p. 8-9 (25 August 2010). Applicant has reviewed the Madden reference and cannot find any recitation of an “transmitting with a second mote at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote” in the description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what Madden “teaches” and/or should be interpreted to “teach.”

With respect to Examiner assertions regarding the teachings of Madden, Applicant demonstrated above that the express recitations of Madden are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what

Madden “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant’s amended Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

**(4) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Ahmed  
“Teaches” Recitations of Independent Claim 1**

As noted above, Examiner has stated as follows:

“As to claim 1, ...

Mulgund in view of Madden does not teach that differently administered notes are owned by different business entities. Ahmed teaches notes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having notes owned by different manufacturers in order to allow for sensing different types of data by different notes, wherein different notes sense different types of information (Mulgund, par. [0026]).

Examiner’s *Office Action*, pp. 13-15 (25 August 2010)<sup>10</sup>.

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<sup>10</sup> Applicant respectfully asserts that Examiner has apparently not examined the recitations of Applicant’s claims, but appears to have ignored the express language of both Applicant’s claims and the Examiner-cited technical material. Accordingly, Applicant respectfully maintains that Examiner has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if Examiner had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

Although Examiner states “Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [a], and accordingly has inadvertently ignored at least the “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” recitations of amended Clause [a]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Ahmed reference identified by Examiner, and so far as Applicant can discern, Ahmed does not recite “an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in Clause [a] of Applicant's amended Independent Claim 1. Rather, the textual portions of Ahmed cited by Examiner actually recite as follows:

To facilitate the control over various aspects of a building, control systems employ sensing devices that measure various conditions, such as temperature, air flow, or motion. Other sensors determine the presence of smoke, the presence of dangerous or noxious chemicals, light and the like. Sensor devices for use in building control systems can vary widely in function, size and cost. Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.

See *Ahmed* [0006] (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Ahmed do *not recite* the text of at least Clause [a] of Independent Claim 1: “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” Instead, Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” (Ahmed paragraph [0006]) Consequently, on its face, Ahmed does not show the cited text of amended Independent Claim 1.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Ahmed describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 1 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 1 and the Examiner-cited Ahmed reference are very different on their faces. See *supra* at p. 18 (quotation of Claim 1); and at p. 36 (quotation of Ahmed); Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 1, and Applicant has noted that Examiner has not yet cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the

unpatentability of amended Claim 1 either under the MPEP or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Ahmed do not recite the text of at least Clause [a] of Independent Claim 1: “transmitting with a first mote at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” (Emphasis added) Instead, Ahmed recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id.” Consequently, on its face, Ahmed does not show the text or the emphasized terms of at least Clause [a] of Independent Claim 1.

Accordingly, insofar as that Ahmed does not recite the text of Clause [a] of Applicant’s Independent Claim 1, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Ahmed could be modified/combined to teach at least Clauses [a] of amended Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Ahmed and Applicant’s Claim 1, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Ahmed “teaches.” Examiner speaks of “transmitting with a second mote [child node]” of Ahmed allegedly where [set of parent nodes excludes a child node].” Examiner’s Office Action, p. 13-15 (25 August 2010). Applicant has reviewed the Ahmed reference and cannot find any recitation of an “transmitting with a second mote at least a part of an aggregate of one or more mote-

addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote” in the description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what Ahmed “teaches” and/or should be interpreted to “teach.”

With respect to Examiner assertions regarding the teachings of Ahmed, Applicant demonstrated above that the express recitations of Ahmed are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Ahmed “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Ahmed teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Ahmed were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Ahmed to the actual express language of Applicant’s amended Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

**(5) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Ahmed actually recites, the question thus naturally arises as to how Examiner saw Ahmed as “teaching” something related to Clause [a] of Independent Claim 1. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Ahmed as set forth, it follows that Examiner is interpreting Ahmed

through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Ahmed are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what the cited technical material "teaches." In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**c) Examiner-Suggested Modifications/Combinations to Meet the Recitations of Independent Claim 1 Are a "Mere Conclusory Statement" Without Evidentiary Support/Change the Principle of Operation of Components of Cited References/Render Such Components Unfit for Intended Purpose; No Teaching to Combine/Modify Components as a Matter of Law.**

In addition and/or in the alternative to the foregoing, Applicant additionally points out that, not only has Examiner failed to adduce any objectively verifiable evidence sufficient to support Examiner assertions regarding alleged teaching to modify/combine Mulgund and/or Madden and/or Ahmed to meet the recitations of Independent Claim 1, there can be no such teaching as a matter of law. Specifically, shown following is that (1)

the Examiner's assertions regarding a teaching to modify/combine the technologies of Mulgund with the technologies of Ahmed appear to be based on conclusory statement(s) without evidentiary support, (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Ahmed as suggested by Examiner in that the proposed modification/combination changes the principle of operation of one or more of the technologies; and (3) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden and Ahmed as suggested by Examiner in that such combination will render one or more of the technologies unfit for their intended purposes.

**(1) Examiner Assertions Regarding A Teaching to Modify/Combine to Meet the Recitations of Independent Claim 1 Are Based on "Mere Conclusory Statements" Without Evidentiary Support**

As explained above, the Supreme Court has stated that when an examiner attempts to establish unpatentability, the Examiner's "*analysis should be made explicit*" ... [*and that*] rejections ... *cannot be sustained by mere conclusory statements*; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.' *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.(citations omitted)

Concerning Claim 1, as noted above, Examiner has stated as follows:

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having notes owned by different manufacturers in order to allow for sensing different types of data by different notes, wherein different notes sense different types of information (Mulgund, par. [0026]).

Examiner's *Office Action*, p. 8-9 (25 August 2010).

Applicant respectfully asserts that this statement is neither evidence nor argument based upon evidence. Instead, the Examiner has attempted to support the present rejection based on this mere conclusory statement "It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having notes owned by different manufacturers in order to allow for sensing



different types of data by different motes, wherein different motes sense different types of information.” Applicant accordingly requests that this statement’s rational underpinning, if any, be made explicit. As explained below, however, in this context such an underpinning could not be articulated.

**2. Amended Dependent Claims 2-12, 30-32 and 39-42: Patentable for at Least Reasons of Dependency from Independent Claim 1.**

Amended Claims 2-12, 30-32 and 39-42 depend either directly or indirectly from Independent Claim 1. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 2-12, 30-32 and 39-42 are patentable for at least the reasons why Independent Claim 1 is patentable. Accordingly, Applicant respectfully requests that Examiner hold amended Dependent Claims 2-12, 30-32 and 39-42 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

**3. Dependent Claim 31 is Independently Patentable**

Dependent Claim 31 is patentable for the reasons set forth above, and also due to additional reasons. Claim 31 recites “The method of claim 2, wherein the mote-addressed sensing index or the mote-addressed control index indicates the availability of information at a sensing device, a format of information obtained from the sensing device, or a format of commands to query the sensing device.” (Emphasis added)

With reference to Claim 31, the Examiner has stated as follows:

As to claim 31, Mulgund in view of Madden ACQP, Ahmed, and Madden TAG teaches that the mote-addressed sensing index or the mote-addressed control index indicates a format of information obtained from the sensing device [readings are presented in a context of name-value pairs] (section 3.1 Basic Language Features, Madden ACQP) and (section 2 last paragraph, Madden TAG).).

Examiner’s *Office Action*, p. 13 (25 August 2010).

Appellant comments and arguments with respect to Mulgund, Madden and Ahmed in amended claim 1 are set forth above, and for the sake of brevity, are incorporated herein by reference. Regarding Mulgund, Appellant respectfully submits that Appellant has reviewed the portions of Madden ACQP, and as far as Appellant can discern, Madden ACQP does not state or suggest the above-noted recitations of Dependent Claim 31.

Specifically, the Examiner-cited portions of Madden ACQP recite as follows:

### 3.1 Basic Language Features

Queries in TinyDB, as in SQL, consist of a SELECT-FROM-WHERE clause supporting selection, join, projection, and aggregation. We also include explicit support for ~ampling, windowing, and sub-queries via materialization points. As is the case in the Cougar and TAG work [41,34], we view sensor data as a single table with One column per sensor type. Tuples are appended to this table periodically, at well~defined sample intervals that are a parameter of the query. The period of time between each sample interval is known as an epoch. As we discuss in Section 6, epochs provide a convenient mechanism for structuring computation to minimize power consumption. Consider the query:

```
SELECT nodeid, light, temp
FROM sensors
SAMPLE INTERVAL 1s FOR 10s
```

This query specifies that each sensor should report its own id, light, and temperature readings (contained in the virtual table sensors) once per second for 10 seconds. Results of this query stream to the root of the network in an online fashion, via the multi-hop topology, where they may be logged or output to the user. The output consists of a sequence of tuples, clustered into 1 s time intervals. Each tuple includes a time stamp corresponding to the time it was produced.

Note that the sensors table is (conceptually) an unbounded, continuous data stream of values; as is the case in other streaming and online systems, certain blocking operations (such as sort and symmetric join) are not allowed over such streams unless a bounded subset of the stream, or window is specified. Windows in TinyDB are defined as fixed-size materialization points over the sensor streams. Such materialization points accumulate a small buffer of data that may be used in other queries. (Emphasis Added)

See Madden ACQP section 3.1.

Regarding Mulgund, Appellant respectfully submits that Appellant has reviewed the portions of Madden TAG, and as far as Appellant can discern, Madden TAG does not state or suggest the above-noted recitations of Dependent Claim 31.

Specifically, the Examiner-cited portions of Madden TAG recite as follows:

Messages in the current generation of TinyOS are a fixed size – by default, 30 bytes. Each sensor has a unique sensor ID that distinguishes it from others. All messages specify their recipient (or specify broadcast, meaning all available recipients), allowing sensors to ignore messages not intended for them, although nonbroadcast messages are received by all sensors within range – unintended recipients simply drop messages not addressed to them.

See section 2 last paragraph, Madden TAG.

Appellant respectfully submits that the Examiner-cited portions of Madden ACQP and Madden TAG do not state or suggest “wherein the mote-addressed sensing index or the mote-addressed control index indicates the availability of information at a sensing device, a format of information obtained from the sensing device, or a format of commands to query the sensing device.” as recited in Dependent Claim 31. Madden ACQP merely states that “Note that the sensors table is (conceptually) an unbounded, continuous data stream of values; as is the case in other streaming and online systems, certain blocking operations (such as sort and symmetric join) are not allowed over such streams unless a bounded subset of the stream, or window. is specified.” Madden TAG, section 2 last paragraph states “Each sensor has a unique sensor ID that distinguishes it from others.” Madden ACQP and Madden TAG are silent as to “*content index indicates ...*” as recited in Dependent Claim 31. For this reason, the Examiner has failed to meet his burden to establish a prima facie case of unpatentability of Claim 31, and Claim 31 is patentable for this additional reason. Therefore, Appellant respectfully requests the examiner withdraw his rejections and hold Dependent Claim 31 allowable and to issue a Notice of Allowability of same.

**B. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks ") Do Not Show or Suggest the Text of Independent Claim 13 and Dependent Claims 15-24 and 33-35 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 13**

Independent Claim 13 recites:

“A system comprising:

a device coupled with a first mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes** administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” (Emphasis Added)

As shown following, (1) Examiner has ignored several express recitations of amended Independent Claim 13 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden to “teach” at least a portion of the text of Independent Claim 13 but has not yet provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/ combinations of technologies cited by Examiner to meet the recitations of Independent Claim 13 are mere conclusory statements.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case of the unpatentability of amended Independent Claim 13 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 13 and Issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 13 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 13**

As set forth above, Independent Claim 13 recites:

13. A system comprising:  
[a] a device coupled with a first mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” (Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 13, Mulgund teaches:  
transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of notes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach that transmitting is done with a device controlled by a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added). In Mulgund, aggregation is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation Of mote-addressed content indexes (abstract). Madden teaches a device controlled by a second mote [child node's RFM radio device] to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor

attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having a device controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).”

Examiner’s *Office Action*, p. 17-18 (25 August 2010).

As noted, Clause [a] of Independent Claim 13 recite “a device coupled with a first mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes** administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” (Emphasis added) It appears to Applicant that Examiner has attempted to map “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” onto “In many cases, a building will have sensor devices from multiple manufacturers that provide

different types of output signals.” (Ahmed Paragraph [0006]) Applicant notes that Examiner has not yet explained how he would reach this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description), and furthermore, Applicant points out that this mapping would appear to disregard at least the “aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.”

In view of the foregoing, Applicant points several claim terms have of amended claim 13 have been disregarded in its analysis. Because Examiner ignored or has yet to reject at least the foregoing bolded recitations of amended Independent Claim 13, under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 13. For these reasons, Applicant respectfully asks Examiner to hold amended Independent Claim 13 allowable and to issue a Notice of Allowability of same.

**b) Examiner is Characterizing Mulgund and/or Mulgund and/or Ahmed to “Teach” the Text of Independent Claim 13, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 13**

The Examiner has stated as follows:

“As to claim 13, Mulgund teaches:  
transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of notes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database

server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach that transmitting is done with a device controlled by a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added). In Mulgund, aggregation is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation Of mote-addressed content indexes (abstract). Madden teaches a device controlled by a second mote [child node's RFM radio device] to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having a device controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).”

Examiner's *Office Action*, p. 17-18 (25 August 2010).

Applicant respectfully disagrees and traverses the rejection.

**(1) Examiner Has Put Forth No Evidence Supporting His Characterization That Mulgund “Teaches” Recitations of Independent Claim 13**



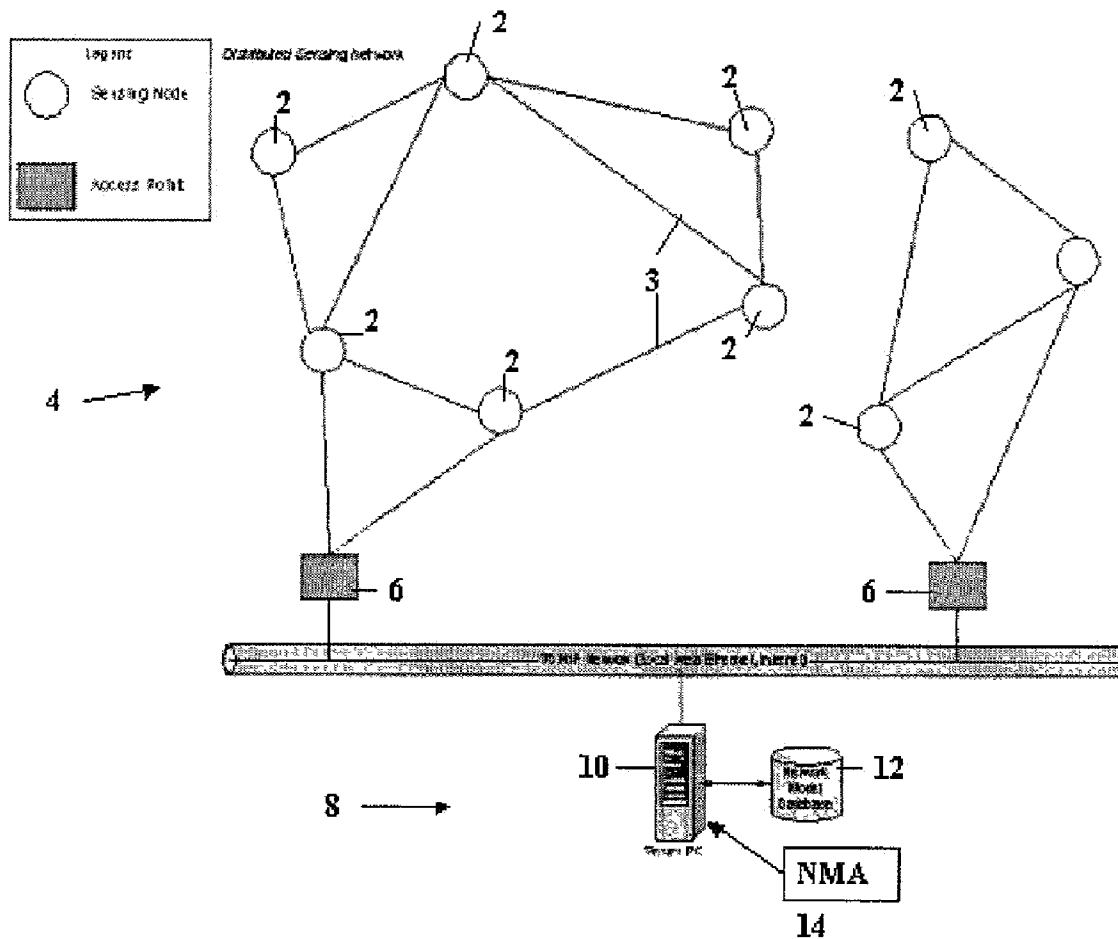
Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “a device coupled with a first mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes**, wherein the first set of motes excludes the second mote administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in Applicant's amended Independent Claim 13. Rather, the portions of Mulgund cited by Examiner recite as follows:

It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

See *Mulgund* (paragraph [0025]) (Emphasis Added)

The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.

See *Mulgund* (paragraph [0062]) (Emphasis Added)



See *Mulgund* (Fig. 1)

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) *that have one or more sensors 16 providing high-value information connected to it*. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

See *Mulgund* (paragraph [0026]) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Mulgund do not recite the text of at least Clause [a] of amended Independent Claim 13: “a device coupled with a first mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” Instead, Mulgund recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (Mulgund Paragraph [0062]) Consequently, on its face, Mulgund does not show the text of at least Clause [a] of amended Independent Claim 13.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 13. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest amended Independent Claim 13 for at least these reasons.

Applicant has shown by direct quotations that amended Independent Claim 13 and the Examiner-cited Mulgund reference are very different on their faces. *See supra* at p. 58 (quotation of Claim 13); at pp. 61–63 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 13, and Applicant has noted that Examiner has not yet cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case

of the unpatentability of amended Claim 13 either under the MPEP or under controlling legal standards.

Accordingly, insofar as that Mulgund does not recite the text of at least Clause [a] of Applicant's amended Independent Claim 13, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [a] of amended Independent Claim 13, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 13 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold amended Independent Claim 13 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant's Independent Claim 13. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 13 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner could see Mulgund as “teaching” something related to Clause [a] of amended Independent Claim 13. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner could purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner would be interpreting Mulgund through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold amended Independent Claim 13 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
“Teaches” Recitations of Independent Claim 13**

As noted above, Examiner has stated as follows:

““As to claim 13, Mulgund teaches:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of nodes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach that transmitting is done with a device controlled by a second mote and that at least a part of an aggregate of one or more mote-addressed content indexes is transmitted (emphasis added). In Mulgund, aggregation is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation Of mote-addressed content indexes (abstract). Madden teaches a device controlled by a second mote [child node's RFM radio device] to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents] (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having a device controlled by a second mote to transmit at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).”

Examiner’s *Office Action*, p. 17-18 (25 August 2010).

Although Examiner states Madden shows a transmitter controlled by a second mote [child node's RFM radio device] to transmit at least a part of an aggregate of one or more mote-addressed content indexes [sensor attributes, such as group id] of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents), wherein in the first set of motes excludes the second mote [set of parent nodes excludes a child node]” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [a], and accordingly has inadvertently ignored at least the “a device controlled by a second mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” recitations of Clause [a]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can discern, Madden does not recite “a device coupled with a first mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in Clause [a] of Applicant's amended Independent Claim 13. Rather, the textual portions of Madden cited by Examiner actually recite as follows:

We present the Tiny AGgregation (TAG) service for aggregation in low-power, distributed, wireless environments. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various

generic properties of aggregates, and show how those properties affect the performance of our in network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault-tolerance of the basic solution.

See *Madden* (Abstract) (Emphasis Added)

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggybacking on the existing ad hoc networking protocol. Sensors route data back towards the user through a routing tree rooted at the basestation. As data flows up this tree, it is aggregated according to an aggregation function and value-based partitioning specified in the query. As an example, consider a query that counts the number of nodes in a network of indeterminate size. First, the request to count is injected into the network. Then, each leaf node in the tree reports a count of 1 to their parent; interior nodes sum the count of their children, add 1 to it, and report that value to their parent. Counts propagate up the tree in this manner, and flow out at the root.

See *Madden* (Section 1.1, Paragraph 2) (Emphasis Added)

Given the simple routing protocol from Section 2.2 and our query model, we now discuss the implementation of the core TAG algorithm for in network aggregation.

A naive implementation of sensor network aggregation would be to use a centralized, server-based approach where all sensor readings are sent to the base station, which then computes the aggregates. In TAG, however, we compute aggregates in network whenever possible, because, if properly implemented, this approach can be lower in number of message transmissions, latency, and power consumption than the server-based approach. We will measure the advantage of in network aggregation in Section 5 below; first, we present the basic algorithm in detail. We first consider the operation of the basic approach in the absence of grouping; we show how to extend it with grouping in Section 4.2.

See *Madden* (Section 4) (Emphasis Added)

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where the aggregate values are continually routed up from children to parents. Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all devices in the network during that epoch.



Given our goal of using as few messages as possible, the collection phase must ensure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

See *Madden* (Section 4.1, Paragraphs 1-2) (Emphasis Added)

Grouping in TAG is functionally equivalent to the GROUP BY clause in SQL: each sensor reading is placed into exactly one group, and groups are partitioned according to an expression over one or more attributes. The basic grouping technique is to push the expression down with the query, ask nodes to choose the group they belong to, and then, as answers flow back, update aggregate values in the appropriate groups.

Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two values using the combining value  $f$ . If it is in a different group, it stores the value of the child's group along with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the node updates the appropriate aggregate. During the next epoch, the node sends the value of all the groups about which it collected information during the previous epoch, combining information about multiple groups into a single message as long as message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

Recall that queries may contain a HAVING clause, which constrains the set of groups in the final query result. This predicate can sometimes be passed into the network along with the grouping expression. The predicate is only sent if it can potentially be used to reduce the number of messages that must be sent: for example, if the predicate is of the form  $\text{MAX}(\text{attr}) < x$ , then information about groups with  $\text{MAX}(\text{attr}) \geq x$  need not be transmitted up the tree, and so the predicate is sent down into the network.

When a node detects that a group does not satisfy a HAVING clause, it can notify other nodes in the network of this information to suppress transmission and storage of values from that group. Note that HAVING clauses can be pushed down only for monotonic aggregates; non-monotonic aggregates are not amenable to this technique. However, not all HAVING predicates on monotonic aggregates can be pushed down; for example,  $\text{MAX}(\text{attr}) > x$  cannot be applied in the network because a

node cannot know that, just because its local value of *attr* is less than *x*, the MAX over the entire group is less than *x*.

Grouping introduces an additional problem: the number of groups can exceed available storage on any one (nonleaf) device. Our proposed solution is to evict one or more groups from local storage. Once an eviction victim is selected, it is forwarded to the node's parent, which may choose to hold on to the group or continue to forward it up the tree. Notice that a single node may evict several groups in a single epoch (or the same group multiple times, if a bad victim is selected). This is because, once group storage is full, if only one group is evicted at a time, a new eviction decision must be made every time a value representing an unknown or previously evicted group arrives. Because groups can be evicted, the base station at the top of the network may be called upon to combine partial

groups to form an accurate aggregate value. Evicting partially computed groups is known as partial *preaggregation*, as described in [15].

Thus, we have shown how to partition sensor readings into a number of groups and properly compute aggregates over those groups, even when the amount of group information exceeds available storage in any one device. We will briefly mention experiments with grouping and group eviction policies in Section 5.2. First, we summarize some of the additional benefits of TAG.

See Madden (Section 4.2) (Emphasis Added)

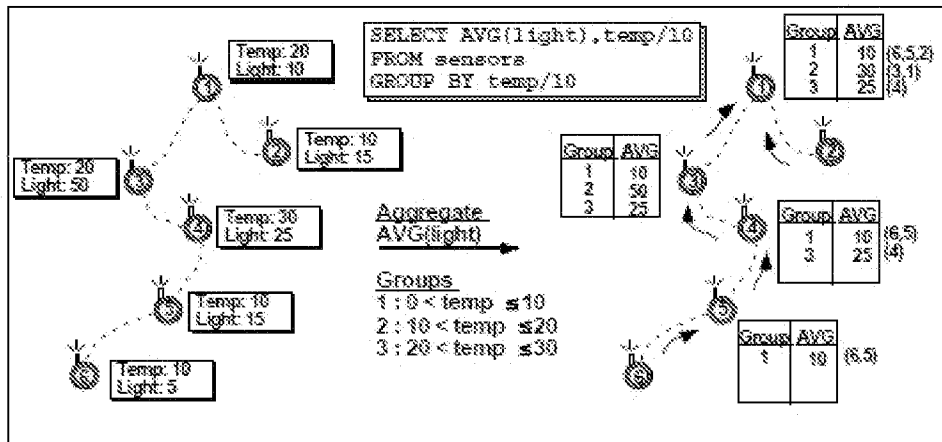


Figure 2: A sensor network (left) with an in network, grouped aggregate applied to it (right). Parenthesized numbers represent nodes that contribute to the average

See Madden (Figure 2)

As can be seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of amended Independent Claim 13: “a device coupled with a first mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Consequently, on its face, Madden does not show the cited text of amended Independent Claim 13.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Madden describes or teaches the text of Clause [a] of amended Independent Claim 13. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 13 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 13 and the Examiner-cited Madden reference are very different on their faces. See *supra* at p. 45-46 (quotation of Claim 13); at p. 50-51 (quotation of Mulgund) and at p. 56-59 (quotation of Madden). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art

is very different from Claim 13, and Applicant has noted that Examiner has not yet cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 13 either under the MPEP or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Madden do not recite the text of at least Clause [a] of Independent Claim 13: “a device coupled with a first mote to transmit at least a part of an **aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.**” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id.” Consequently, on its face, Madden does not show the text of at least Clause [a] of amended Independent Claim 13.

Accordingly, insofar as that Madden does not recite the text of Clause [a] of Applicant’s Independent Claim 13, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clause [a] of amended Independent Claim 13, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 13 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold amended Independent Claim 13 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant’s amended Claim 13, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Madden “teaches.”

Examiner speaks of “a mote” of Madden allegedly with a resident “a multi-mote index creation agent.” Examiner’s Office Action, p. 12-13 (25 August 2010). Applicant has reviewed the Madden reference and cannot find any recitation of an “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” in the mote description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what Madden “teaches” and/or should be interpreted to “teach.”

With respect to Examiner assertions regarding the teachings of Madden, Applicant demonstrated above that the express recitations of Madden are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant’s amended Independent Claim 13. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold amended Independent Claim 13 allowable and issue a Notice of Allowability of same.

**(4) Examiner Has Put Forth No Evidence  
Supporting His Characterization that Ahmed  
“Teaches” Recitations of Independent Claim  
13**

As noted above, Examiner has stated as follows:

“As to claim 13, ...

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026])..

Examiner’s *Office Action*, pp. 17-18 (25 August 2010)<sup>11</sup>.

Although Examiner states “Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [a], and accordingly has inadvertently ignored at least the “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” recitations of amended Clause [a]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points

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<sup>11</sup> Applicant respectfully asserts that Examiner has apparently not examined the recitations of Applicant’s claims, but appears to have ignored the express language of both Applicant’s claims and the Examiner-cited technical material. Accordingly, Applicant respectfully maintains that Examiner has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if Examiner had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

out that Applicant has reviewed the Ahmed reference identified by Examiner, and so far as Applicant can discern, Ahmed does not recite “an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in Clause [a] of Applicant's amended Independent Claim 13. Rather, the textual portions of Ahmed cited by Examiner actually recite as follows:

To facilitate the control over various aspects of a building, control systems employ sensing devices that measure various conditions, such as temperature, air flow, or motion. Other sensors determine the presence of smoke, the presence of dangerous or noxious chemicals, light and the like. Sensor devices for use in building control systems can vary widely in function, size and cost. Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.

See *Ahmed* [0006] (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Ahmed do not recite the text of at least Clause [a] of Independent Claim 13: “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” Instead, Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” (Ahmed paragraph [0006]) Consequently, on its face, Ahmed does not show the cited text of amended Independent Claim 13.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Ahmed describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 13 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 13 and the Examiner-cited Ahmed reference are very different on their faces. See *supra* at p. 64 (quotation of Claim 13); and at p. 65 (quotation of Ahmed); Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 13, and Applicant has noted that Examiner has not yet cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 13 either under the *MPEP* or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Ahmed do not recite the text of at least Clause [a] of Independent Claim 13: “a device coupled with a first mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” (Emphasis added) Instead, Ahmed recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id.” Consequently, on its face, Ahmed does



not show the text or the emphasized terms of at least Clause [a] of Independent Claim 13.

Accordingly, insofar as that Ahmed does not recite the text of Clause [a] of Applicant's Independent Claim 13, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Ahmed could be modified/combined to teach at least Clauses [a] of amended Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 13 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 13 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Ahmed and Applicant's Claim 13, Applicant points out that Examiner has not provided evidence in support of Examiner's allegations as to what Ahmed "teaches." Examiner speaks of "transmitting with a second mote [child node]" of Ahmed allegedly where [set of parent nodes excludes a child node]." Examiner's Office Action, p. 18-19 (25 August 2010). Applicant has reviewed the Ahmed reference and cannot find any recitation of an "transmitting with a second mote at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes excludes the second mote" in the description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what Ahmed "teaches" and/or should be interpreted to "teach."

With respect to Examiner assertions regarding the teachings of Ahmed, Applicant demonstrated above that the express recitations of Ahmed are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Ahmed "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Ahmed teaches as asserted by

Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Ahmed were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Ahmed to the actual express language of Applicant's amended Independent Claim 13. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 13 allowable and issue a Notice of Allowability of same.

**(5) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Madden actually recites, the question thus naturally arises as to how Examiner could see Madden as "teaching" something related to Clause [a] of amended Independent Claim 13. Applicant respectfully points out that the Applicant's Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner could purport the references to teach. From this and the express recitations of Madden as set forth, it follows that Examiner would be interpreting Madden through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's assertions regarding Madden are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold amended Independent Claim 13 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what

the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**c) Examiner-Suggested Modifications/Combinations to Meet the Recitations of Independent Claim 13 Are a “Mere Conclusory Statement” Without Evidentiary Support/Change the Principle of Operation of Components of Cited References/Render Such Components Unfit for Intended Purpose; No Teaching to Combine/Modify Components as a Matter of Law.**

In addition and/or in the alternative to the foregoing, Applicant additionally points out that, not only has Examiner failed to adduce any objectively verifiable evidence sufficient to support Examiner assertions regarding alleged teaching to modify/combine Mulgund and/or Madden to meet the recitations of Independent Claim 13, there can be no such teaching as a matter of law. Specifically, shown following is that (1) the Examiner’s assertions regarding a teaching to modify/combine the technologies of Mulgund with the technologies of Madden appear to be based on conclusory statement(s) without evidentiary support, (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden as suggested by Examiner in that the proposed modification/combination changes the principle of operation of one or more of the technologies; and (3) under the MPEP standards there can be no teaching to modify/combine the technologies of Mulgund with the technologies of Madden as suggested by Examiner in that such combination will render one or more of the technologies unfit for their intended purposes.

**(1) Examiner Assertions Regarding A Teaching to Modify/Combine to Meet the Recitations of Independent Claim 13 Are Based on “Mere Conclusory Statements” Without Evidentiary Support**

As explained above, the Supreme Court has stated that when an examiner attempts to establish unpatentability, the Examiner’s “*analysis should be made explicit*” ... [*and* that] rejections ... *cannot be sustained by mere conclusory statements*; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’ *KSR v. Teleflex*, 550 U.S. \_\_\_\_; 127 S. Ct. 1727 at 1741.(citations omitted)

Concerning Claim 13, as noted above, Examiner has stated as follows:

“As to claim 13, ...:

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having notes owned by different manufacturers in order to allow for sensing different types of data by different notes, wherein different notes sense different types of information (Mulgund, par. [0026]).”

Examiner’s *Office Action*, p. 18 (25 August 2010).

Applicant respectfully asserts that this statement is neither evidence nor argument based upon evidence. Instead, the Examiner has attempted to support the present rejection based on this mere conclusory statement that “It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having notes owned by different manufacturers in order to allow for sensing different types of data by different notes, wherein different notes sense different types of information.” Applicant accordingly requests that this statement’s rational underpinning, if any, be made explicit. As explained below, however, in this context such an underpinning could not be articulated.

**2. Amended Dependent Claims 15-24 and 33-35: Patentable for at Least Reasons of Dependency from Independent Claim 13.**

Amended Claims 15-24 and 33-35 depend either directly or indirectly from Independent Claim 13. "A claim in dependent form shall be construed to incorporate by

reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 15-24 and 33-35 are patentable for at least the reasons why Independent Claim 13 is patentable. Further dependent **claims 34 has been further amended and reconsideration of this claim is requested.** Accordingly, Applicant respectfully requests that Examiner hold amended Dependent Claims 15-24 and 33-35 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

**C. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks ") and Ahmed and Woo (A Transmission Control Scheme for Media Access in Sensor Networks)) Do Not Show or Suggest the Text of Independent Claim 25 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 25**

Amended Independent Claim 25 recites:

25. A system comprising:

a first mote; and

means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes **administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes**, and said means for transmitting being disposed proximate to said first mote. (Emphasis Added)

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 25 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden and/or Ahmed and/or Woo to “teach” at least a portion of the text of Independent Claim 25 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/ combinations of technologies cited by Examiner to meet the recitations of Independent Claim 25 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 25 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 25 and Issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 25 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 25**

As set forth above, Amended Independent Claim 25 recites:

25. A system comprising:  
[a] a first mote; and  
[b] means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes,** and said means for transmitting being disposed proximate to said first mote.  
(Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 25, Mulgund teaches a second mote (Fig. 1 node (2)) and

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of nodes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote, and said means for transmitting being disposed proximate to said second mote.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1) Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities.

Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).

Mulgund in view of Madden and Ahmed does not teach that the transmitted aggregate of one or more mote-addressed content indexes of

the first set of motes excludes mote-addressed content indexes of the second mote.

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo teaches that the transmitted data of the first set of motes excludes data of the second mote [multihop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden and Ahmed by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

Examiner’s *Office Action*, p. 25-28 (25 August 2010).

As noted, Clause [b] of Independent Claim 25 recites “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of **a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes**, and said means for transmitting being disposed proximate to said first mote.” (Emphasis added) It appears to Applicant that Examiner may map “administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed



proximate to said first mote,” onto “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Applicant notes that Examiner has not explained how he reaches this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description), and furthermore, Applicant points out that this mapping would appear to disregard at least the “administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed proximate to said first mote.”

In view of the foregoing, Applicant points out that although Independent Claim 25 has been quoted in the present rejection, several claim terms in amended Claim 25 have been disregarded in its analysis. Because the Examiner has yet to consider at least the foregoing bolded recitations of Independent Claim 25, under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 25. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.

- b) **Examiner is Characterizing Mulgund and/or Madden and/or Woo to “Teach” the Text of Independent Claim 25, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 25**

The Examiner has stated as follows:

“As to claim 25, Mulgund teaches a second mote (Fig. 1 node (2)) and

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of nodes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote, and said means for transmitting being disposed proximate to said second mote.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1) Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities.

Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).

Mulgund in view of Madden and Ahmed does not teach that the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excludes mote-addressed content indexes of the second mote.

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo teaches that the transmitted data of the first set of motes excludes data of the second mote [multihop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden and Ahmed by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

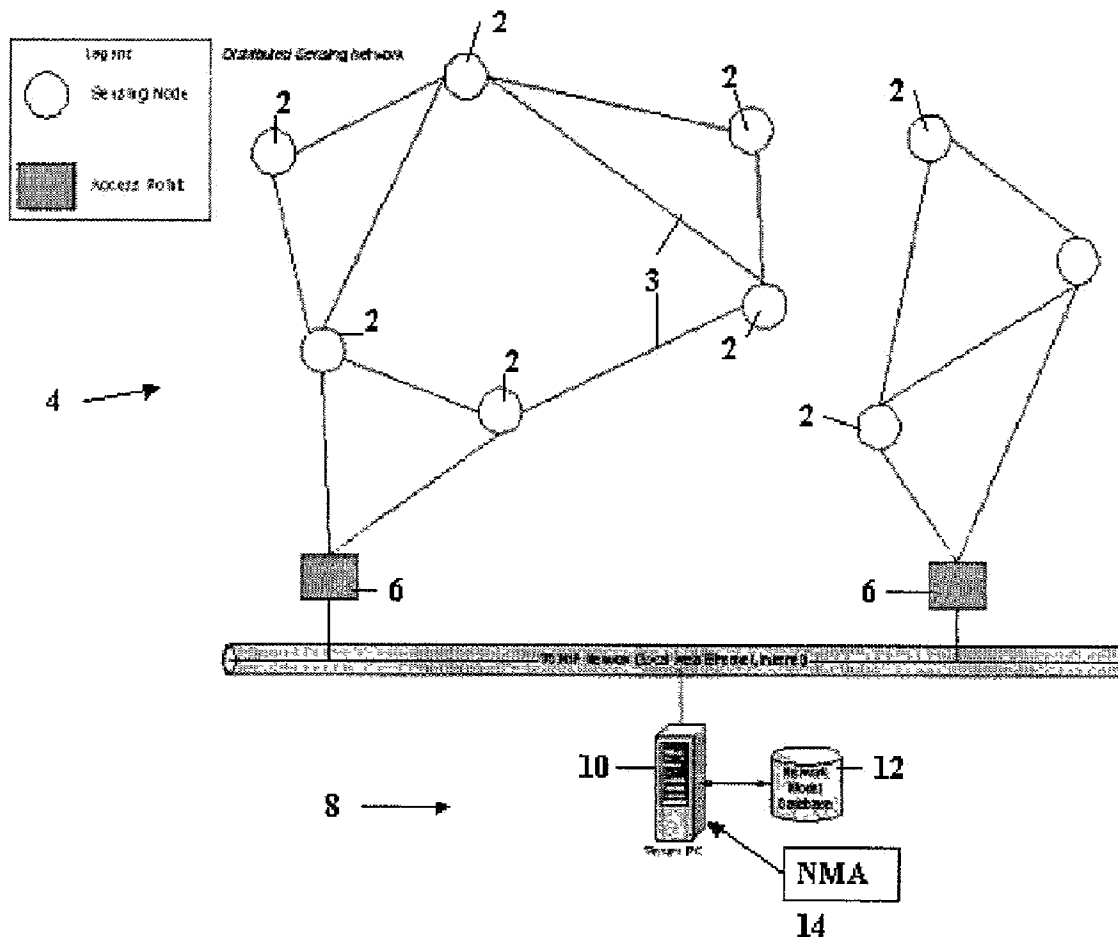
Examiner’s *Office Action*, p. 25-28 (25 August 2010).

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Applicant respectfully traverses the rejection.

**(1) Examiner Has Put Forth No Evidence  
Supporting His Characterization That  
Mulgund “Teaches” Recitations of  
Independent Claim 25**

Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote” as recited in Applicant's Independent Claim 25. Rather, the portions of Mulgund cited by Examiner recite as follows:



See *Mulgund* (Fig. 1)

As can be seen from the foregoing, the Examiner-identified portions of *Mulgund* do *not recite* the text of at least Clause [b] of amended Independent Claim 25: “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote**, and said means for transmitting being disposed proximate to said second mote.” (Emphasis Added) Instead, *Mulgund* recites “The traversal process begins at

node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (Mulgund Paragraph [0062]) Consequently, on its face, Mulgund does not show the text of at least Clause [b] of Independent Claim 25.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no PROFFERED EVIDENCE THAT WOULD SUPPORT A finding of fact that Mulgund describes or teaches the text of Clause [b] of Independent Claim 25. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 25 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 25 and the Examiner-cited Mulgund reference are very different on their faces. See *supra* at p. 78 (quotation of Claim 25); at pp. 78 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 25, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 25 either under the *MPEP* or under controlling legal standards.

Accordingly, insofar as that Mulgund does not recite the text of at least Clauses [b] of Applicant’s amended Independent Claim 25, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [b] of Independent Claim 25, Applicant respectfully points out that under the *MPEP* guidelines as set forth above, the Examiner-cited technical material does not establish a *prima*

*facie* case of the unpatentability of Independent Claim 25 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant’s amended Independent Claim 25. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [b] of Independent Claim 25. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the

foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
“Teaches” Recitations of Independent Claim 25**

As noted above, Examiner has stated as follows:

“As to claim 25, Mulgund teaches a second mote (Fig. 1 node (2)) and

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of notes at the left side of Fig. 1] (par. [0025] and [0062], wherein “node” and “mote” are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point/base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, the transmitted aggregate of one or more mote-addressed

content indexes of the first set of motes excluding mote-addressed content indexes of the second mote, and said means for transmitting being disposed proximate to said second mote.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, and said means for transmitting being disposed proximate to said mote in order to facilitate routing data between devices (Madden, section 1) Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities.

Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).

Mulgund in view of Madden and Ahmed does not teach that the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excludes mote-addressed content indexes of the second mote.

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo teaches that the transmitted data of the first set of motes excludes data of the second mote [multihop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden and Ahmed by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

Examiner’s *Office Action*, p. 25-28 (25 August 2010).



Although Examiner states “Madden shows means for transmitting at least a part of an aggregate of one. Or more mote-addressed content indexes of a first set of motes, the first set of motes excluding the second mote, and said means for transmitting being disposed proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (Madden section 1 Introduction),” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has not considered at least the “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes **administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes,** and said means for transmitting being disposed proximate to said first mote.” as recited in Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can discern, Madden does not recite “administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed proximate to said first mote,” as recited in amended Clause [b] of Applicant’s Independent Claim 25. Rather, the textual portions of Madden cited by Examiner actually recite as follows:

Recent advances in computing technology have led to the production of a new class of computing device: the wireless, battery powered, smart sensor [25]. These new sensors are active, full fledged computers, capable not only of measuring real world phenomena but also filtering, sharing, and combining those measurements. One example of such small sensor devices are the motes under development at UC Berkeley. Current generation motes are roughly 2cm x 4cm x 1cm and are equipped with a radio, a processor, memory, a small battery pack, and a suite of sensors. The mote operating system, TinyOS, provides a set of primitives designed to facilitate the deployment of motes in ad-hoc networks. In such networks, devices can identify each other and route data without prior knowledge of or assumptions about the network topology, allowing the network topology to change as devices move, run out of power, or experience shifting waves of interference. Due to the relative ease of deployment of mote-based sensor networks, practitioners in a variety of fields have begun considering them for a range of monitoring and data collection tasks. For example: civil engineers are using motes to monitor building integrity during earthquakes [31]; biologists are planning mote deployments for habitat monitoring[21, 5]; administrators of large computer clusters are interested in using motes to monitor the temperature and power usage in their data centers. All of these sensor applications depend on the ability to extract data from the network. Often, this data consists of summaries (or aggregations) rather than raw sensor readings. Other researchers have noted the importance of data aggregation in sensor networks [13, 10, 12]. This previous work has tended to view aggregation as an application specific mechanism that would be programmed into the devices on an as-needed basis, typically in error-prone, low-level languages like C. In contrast, our position is that because aggregation is so central to emerging sensor network applications, it must be provided as a core service by the system software. Instead of a set of extensible C APIs, we believe this service should consist of a generic, easily invoked high-level programming abstraction. This approach enables users of sensor networks, who often are not networking experts or even computer scientists, to focus on their applications free from the idiosyncrasies of the underlying embedded OS and hardware.

See *Madden* (Section 1, Introduction) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of *Madden* do not recite the text of at least Clause [b] of Independent Claim 25: “administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content

index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote.” Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f .” (Madden Section 4.2) Consequently, on its face, Madden does not show the cited text of amended Independent Claim 25.

**(4) Examiner Has Put Forth No Evidence  
Supporting His Characterization that Ahmed  
“Teaches” Recitations of Independent Claim  
25**

As noted above, Examiner has stated as follows:

“As to claim 25, ....

Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).”

Examiner’s *Office Action*, p. 25-28 (25 August 2010).

Although Examiner states “Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has inadvertently ignored at least the “aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes

administered by a second network administrator owned or controlled by a second business entity” recitations of amended Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Ahmed reference identified by Examiner, and so far as Applicant can discern, Ahmed does not recite “an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in Clause [b] of Applicant's amended Independent Claim 25. Rather, the textual portions of Ahmed cited by Examiner actually recite as follows:

To facilitate the control over various aspects of a building, control systems employ sensing devices that measure various conditions, such as temperature, air flow, or motion. Other sensors determine the presence of smoke, the presence of dangerous or noxious chemicals, light and the like. Sensor devices for use in building control systems can vary widely in function, size and cost. Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.

See *Ahmed* [0006] (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Ahmed do not recite the text of at least Clause [b] of Independent Claim 25: “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed proximate to said first mote.” Instead, Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled.”

In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” (Ahmed paragraph [0006]) Consequently, on its face, Ahmed does not show the cited text of amended Independent Claim 25.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Ahmed describes or teaches the text of Clause [b] of Independent Claim 25. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 25 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 25 and the Examiner-cited Ahmed reference are very different on their faces. *See supra* at p. 83 (quotation of Claim 25); and at p. 85 (quotation of Ahmed); Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 25, and Applicant has noted that Examiner has not yet cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 25 either under the *MPEP* or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Ahmed do not recite the text of at least Clause [b] of Independent Claim 25: “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes **administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or**

**controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes**, and said means for transmitting being disposed proximate to said first mote..” (Emphasis added) Instead, Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” Consequently, on its face, Ahmed does not show the text or the emphasized terms of at least Clause [b] of Independent Claim 25.

Accordingly, insofar as that Ahmed does not recite the text of Clause [b] of Applicant’s Independent Claim 25, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Ahmed could be modified/combined to teach at least Clauses [b] of amended Independent Claim 25, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 25 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Ahmed and Applicant’s Claim 25, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Ahmed “teaches.” Examiner speaks of “**motes owned by different manufacturers.**” Examiner’s Office Action, p. 26 (25 August 2010). Applicant has reviewed the Ahmed reference and cannot find any recitation of an “first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes

of the first set of motes excluding mote-addressed content of the first set of motes” in the description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what Ahmed “teaches” and/or should be interpreted to “teach.”

With respect to Examiner assertions regarding the teachings of Ahmed, Applicant demonstrated above that the express recitations of Ahmed are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Ahmed “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Ahmed teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Ahmed were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Ahmed to the actual express language of Applicant’s amended Independent Claim 25. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

**(5) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Woo  
“Teaches” Recitations of Independent Claim  
25**

As noted above, Examiner has stated as follows:

“As to claim 25,...

Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack). In particular, Woo teaches that the transmitted data of the first set of motes excludes data of the second mote [multihop component receives a packet and retransmits it to the upstream level] (section 2.1 Networking Component Stack, par. 2).

It would have been obvious to one of ordinary skill in the art at the time of the rejection to modify the system of Mulgund in view of Madden and Ahmed by having the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes exclude mote-addressed content indexes of the second mote in order to perform pure retransmission of received packets along the network without performing additional functionality of aggregating, such pure retransmission conserving power from being used for data aggregation in each mote.”

Examiner’s *Office Action*, p. 25-28 (25 August 2010).

Although Examiner states “Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multi hop network,” Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has yet to consider at least the **“administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed proximate to said first mote”** (Emphasis added) recitations of Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Woo reference identified by Examiner, and so far as Applicant can discern, Woo does not recite “the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes” as recited in Clause [b] of Applicant’s amended Independent Claim 25. Rather, the textual portions of Woo cited by Examiner actually recite as follows:

TinyOS [7] is an event-based operating system for these devices that provides fine-grained interleaving of event processing and tasks from multiple system components. The complete TinyOS application for our



study is shown in Figure 2. There is a component providing an asynchronous interface to each sensor and a stack of components to implement networking over the radio. The lowest layer transmits or receives bytes bit-by-bit over the radio. It provides phase and rate controls to lock on to the packet start symbol and then to spool bits. At this level, the interface is half-duplex - the radio is receiving except, during packet transmission. The packet-level component is responsible for spooling incoming bytes and delivering the packet receive event. It is where the media access control mechanisms for transmit reside. (It also performs the encoding and decoding of the byte stream onto the link and error checking: Manchester encoding with an 16-bit CRC.) Packets are short and of a fixed size, typically 30 bytes including an one byte destination field, an one byte handler field, and an application data unit.

The Active Message component delivers tagged packet events to application level components. Here we have two such components. The sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network. The other component is responsible for building the dynamic multihop network and routing traffic. A simple beacon-based discovery protocol maintains a breadth-first spanning tree, such that each node knows a "parent node" closer to the base station. Originating sensor packets are marked for the parent. (All other nodes discard them.) At each hop, the multihop component receives a packet and retransmits it to the upstream level. In general, this component might perform aggregation or statistical analysis. However, we restrict ourselves to the case where it forwards all data to the infrastructure for analysis, as this focuses the work on the media access and transmission control aspects. This component does collect statistics on the number of nodes routing through it. The only buffering in the system is a fixed number of small packet buffers at the application level, one of which is used for the asynchronous receive. Thus, if the radio is busy transmitting or receiving when a packet send is requested, the request will fail back up to the application component. Once the packet component has accepted a packet for transmission, it will work on it until it acquires the channel and transmits it. Thus, the transmission rate control is implemented within the two application components.

See *Woo* (Section 2.1, Networking Component Stack)

As can be seen from the foregoing, the Examiner-identified portions of *Woo* do not recite the text of at least Clause [b] of Independent Claim 25: “administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned

or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed proximate to said first mote.” Instead, Woo recites “the sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network.” Consequently, on its face, Woo does not show the cited text of Independent Claim 25.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no PROFFERED EVIDENCE THAT WOULD SUPPORT A finding of fact that Madden describes or teaches the text of Clause [b] of Independent Claim 25. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 25 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 25 and the Examiner-cited Mulgund, Madden, Ahmed and Woo references are very different on their faces. *See supra* (quotation of Claim 25); (quotation of Mulgund); (quotation of Ahmed); (quotation of Madden); (quotation of Woo). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 25, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 25 either under the *MPEP* or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Madden, Mulgund, Ahmed and Woo do not recite the text of at least Clause [b] of Independent Claim 25: “means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first

network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, **the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes**, and said means for transmitting being disposed proximate to said first mote.” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent.” Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals” and Woo recites “the sensor component periodically receives a clock event, acquires sensor data, and transmits the data toward a base station over the multi hop network.” Consequently, on its face, Madden, Ahmed and/or Woo do not show the text of at least Clause [b] of Independent Claim 25.

Accordingly, insofar as that Madden does not recite the text of Clause [b] of Applicant’s amended Independent Claim 25, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [b] of amended Independent Claim 25, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 25 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 25 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant’s Claim 25, Applicant points out that Examiner has not provided evidence in support of Examiner’s allegations as to what Madden and/or Ahmed and/or

Woo “teaches.” Examiner speaks of “complete TinyOS application component graph” of Madden allegedly that “facilitates routing data from child device to a parent device.” Examiner’s Office Action, p. 25 (25 August 2010). Examiner speaks of “the sensor component periodically transmits the data toward a base station over the multi hop network” of Woo. Examiner’s Office Action, p. 25 (25 August 2010) Applicant has reviewed the Madden and the Woo reference and cannot find any recitation of an “transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote” in the TinyOS description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what Madden “teaches” and/or should be interpreted to “teach.”

With respect to Examiner assertions regarding the teachings of Madden and/or Mulgund and/or Woo, Applicant demonstrated above that the express recitations of Madden and/or Mulgund and/or Ahmed and/or Woo are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden and/or Mulgund and/or Woo “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner’s assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant’s Independent Claim 25. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

**(6) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund, Madden, Ahmed and Woo actually recites, the question thus naturally arises as to how Examiner saw Mulgund, Madden, Ahmed and Woo as “teaching” something related to Clause [b] of Independent Claim 25. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund, Madden, Ahmed and Woo as set forth, it follows that Examiner is interpreting Mulgund, Madden, Ahmed and Woo through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund, Madden, Ahmed and Woo are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 25 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g., MPEP S 2144.03(C), If Applicant Challenges a Factual Assertion as Not Properly*

*Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence, and 37 C.F.R. 1.104(d)(2).*

**D. Technical Material Cited by Examiner (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks ") and Ahmed Do Not Show or Suggest the Text of Independent Claim 26 and Dependent Claims 27-29 and 36-38 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

**1. Independent Claim 26**

Independent Claim 26 recites:

26. A system comprising:
- at least one mote; and
  - at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.

As shown following, (1) Examiner has ignored several express recitations of Independent Claim 26 in his analysis, (2) Examiner is interpreting Mulgund and/or Madden to “teach” at least a portion of the text of Independent Claim 26 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/ combinations of technologies cited by Examiner to meet the recitations of Independent Claim 26 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, Examiner has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 26 for any or all of

the forgoing reasons. Accordingly, Applicant respectfully requests that Examiner withdraw his rejections of Claim 26 and Issue a Notice of Allowability for same.

**a) Examiner Has Inadvertently Ignored Several Express Recitations of Independent Claim 26 and Therefore Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 26**

As set forth above, Independent Claim 26 recites:

26. A system comprising:
- [a] at least one mote; and
  - [b] at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.** (Emphasis Added)

Concerning this, Examiner has stated as follows:

“As to claim 26, Mulgund teaches at least one mote (Fig. 1 node (2)), and transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of notes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in the first set of motes. In Mulgund, aggregation of separate indexes and creation of a "multi-mote index" is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in the first set of motes [a TinyOS that is installed on each mote of a first set of motes mote and that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).

Examiner's *Office Action*, p. 19-20 (25 August 2010).

As noted, Clause [b] of Independent Claim 26 recite “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.**” (Emphasis added) It appears to Applicant that Examiner has attempted to map “**report at least a part of a multi-mote content index stored in a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and**



**(ii) a second-set content index from a second set of notes administered by a second network administrator owned or controlled by a second business entity.”** onto “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value f.” (Madden Section 4.2) Applicant notes that Examiner has not explained how he would reach this mapping under the broadest reasonable interpretation framework as is Examiner’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description), and furthermore, Applicant points out that this mapping appears to disregard at least the “report at least a part of a multi-note content index stored in a first set of notes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of notes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of notes administered by a second network administrator owned or controlled by a second business entity.”

In view of the foregoing, Applicant points out that although Independent Claim 26 has been quoted in the present rejection, several claim terms have been disregarded in its analysis. Because Examiner ignored at least the foregoing bolded recitations of Independent Claim 26, under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 26. For these reasons, Applicant respectfully asks Examiner to hold Independent Claim 26 allowable and to issue a Notice of Allowability of same.

- b) Examiner is Characterizing Mulgund and/or Madden and/or Ahmed to “Teach” the Text of Independent Claim 26, But Does Not Support His Characterization, Therefore The Examiner Has Not Met His Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 26**

The Examiner has stated as follows:

“As to claim 26, Mulgund teaches at least one mote (Fig. 1 node (2)), and transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [retrieving the sensor-related information stored at a node of a set of nodes at the left side of Fig. 1] (par. [0025] and [0062], wherein "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors; par. [0026]) administered by a first network administrator [administered by a first network access point base station (Fig. 1) to an aggregator [database server 10] (Fig. 1) of (i) a first-set content index from the first set of motes administered by the first network administrator [set of nodes at the left side of Fig. 1] and (ii) a second-set content index from a second set of motes administered by a second network administrator [set of nodes at the right side of Fig. 1 administered by a second network access point] (Fig. 1).

Mulgund does not explicitly teach at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in the first set of motes. In Mulgund, aggregation of separate indexes and creation of a "multi-mote index" is performed in the back-end of the network, i.e. at the server side.

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in the first set of motes [a TinyOS that is installed on each mote of a first set of motes mote and that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

Mulgund in view of Madden does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

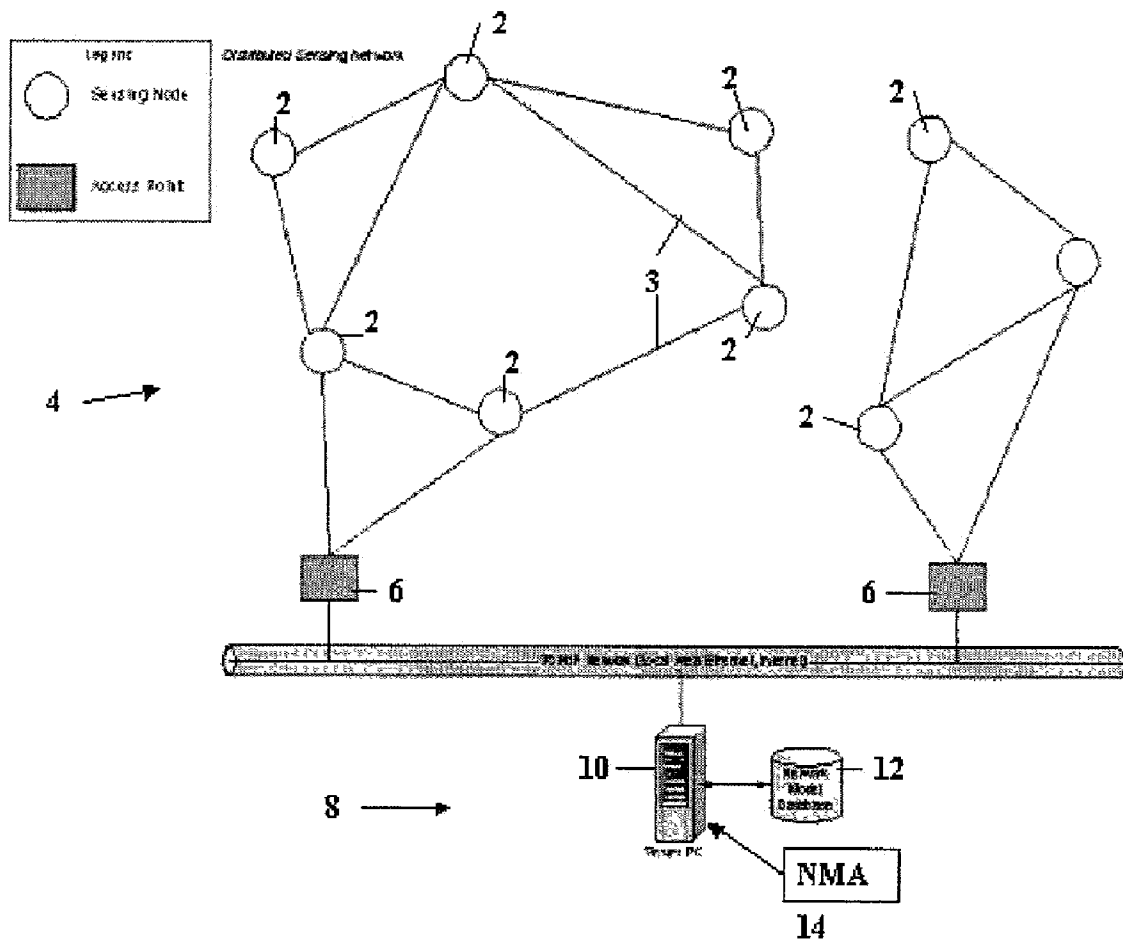
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden by having motes owned by different manufacturers in order to allow for sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).

Examiner's *Office Action*, p. 19-20 (25 August 2010).

Applicant respectfully disagrees and traverses the rejection.

**(1) Examiner Has Put Forth No Evidence Supporting His Characterization That Mulgund “Teaches” Recitations of Independent Claim 26**

Applicant respectfully points out that Applicant has reviewed the portions of the Mulgund reference identified by Examiner, and so far as Applicant can discern, Mulgund do not recite “report at least a part of a multi-mote content index stored in motes other than the at least one mote” as recited in Applicant's Independent Claim 26. Rather, the portions of Mulgund cited by Examiner recite as follows:



See *Mulgund* (Fig. 1)

As can be seen from the foregoing, the Examiner-identified portions of Mulgund do not recite the text of at least Clause [b] of Independent Claim 26: “at least one multi-

mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.**” (Emphasis Added) Instead, Mulgund recites “The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.” (Mulgund Paragraph [0062]) Consequently, on its face, Mulgund does not show the text of at least Clause [b] of Independent Claim 26.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [b] of Independent Claim 26. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 26 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 26 and the Examiner-cited Mulgund reference are very different on their faces. See *supra* at p. 58 (quotation of Claim 26); at p. 100 (quotation of Mulgund). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 26, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the

Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 26 either under the MPEP or under controlling legal standards.

Accordingly, insofar as that Mulgund does not recite the text of at least Clause [b] of Applicant's Independent Claim 26, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [b] of Independent Claim 26, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 26 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 26 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Applicant demonstrated above that the express recitations of Mulgund are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant's Independent Claim 26. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

**(2) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund actually recites, the question thus naturally arises as to how Examiner saw Mulgund as “teaching” something related to Clause [b] of Independent Claim 26. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that Examiner is interpreting Mulgund through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, Examiner’s assertions regarding Mulgund are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner “teaches,” Applicant infers that the Examiner is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**(3) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Madden  
“Teaches” Recitations of Independent Claim 26**

As noted above, Examiner has stated as follows:

“As to claim 26,...

Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches at least one multi-mote

reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in the first set of motes [a TinyOS that is installed on each mote of a first set of motes mote and that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by programming each node with a TinyOS of Madden and thus having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in motes other than the at least one mote in order to facilitate routing data between devices (Madden, section 1).

Examiner's *Office Action*, p. 19-20 (25 August 2010).

Although Examiner states "Madden is directed to in-network aggregation of mote-addressed content indexes (abstract). Madden teaches at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in the first set of motes [a TinyOS that is installed on each mote of a first set of motes mote and that facilitates routing data from child device to a parent device] (section 1 Introduction)." Applicant has pointed out above that Examiner has not engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has inadvertently ignored at least the "least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity," recitations of Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Madden reference identified by Examiner, and so far as Applicant can

discern, Madden does not recite “report at least a part of a multi-mote content index stored in a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” as recited in Clause [b] of Applicant's Independent Claim 26. Rather, the textual portions of Madden cited by Examiner actually recite as follows:

Recent advances in computing technology have led to the production of a new class of computing device: the wireless, battery powered, smart sensor [25]. These new sensors are active, full fledged computers, capable not only of measuring real world phenomena but also filtering, sharing, and combining those measurements. One example of such small sensor devices are the motes under development at UC Berkeley. Current generation motes are roughly 2cm x 4cm x 1cm and are equipped with a radio, a processor, memory, a small battery pack, and a suite of sensors. The mote operating system, TinyOS, provides a set of primitives designed to facilitate the deployment of motes in ad-hoc networks. In such networks, devices can identify each other and route data without prior knowledge of or assumptions about the network topology, allowing the network topology to change as devices move, run out of power, or experience shifting waves of interference. Due to the relative ease of deployment of mote-based sensor networks, practitioners in a variety of fields have begun considering them for a range of monitoring and data collection tasks. For example: civil engineers are using motes to monitor building integrity during earthquakes [31]; biologists are planning mote deployments for habitat monitoring[21, 5]; administrators of large computer clusters are interested in using motes to monitor the temperature and power usage in their data centers. All of these sensor applications depend on the ability to extract data from the network. Often, this data consists of summaries (or aggregations) rather than raw sensor readings.

Other researchers have noted the importance of data aggregation in sensor networks [13, 10, 12]. This previous work has tended to view aggregation as an application specific mechanism that would be programmed into the devices on an as-needed basis, typically in error-prone, low-level languages like C. In contrast, our position is that because aggregation is so central to emerging sensor network applications, it must be provided as a core service by the system software. Instead of a set of extensible C APIs, we believe this service should consist of a generic, easily invoked high-level programming abstraction. This approach enables users of sensor networks, who often are not networking experts or even



computer scientists, to focus on their applications free from the idiosyncrasies of the underlying embedded OS and hardware.

See *Madden* (Section 1, Introduction) (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of *Madden* do not recite the text of at least Clause [b] of Independent Claim 26: “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” Instead, *Madden* recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two value using the combining value  $f$ .” (*Madden* Section 4.2) Consequently, on its face, *Madden* does not show the cited text of Independent Claim 26.

**(4) Examiner Has Put Forth No Evidence  
Supporting His Characterization That Ahmed  
“Teaches” Recitations of Independent Claim  
26**

As noted above, Examiner has stated as follows:

“As to claim 26,...

Mulgund in view of *Madden* does not teach that differently administered motes are owned by different business entities. Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of *Madden* by having motes owned by different manufacturers in order to allow for

sensing different types of data by different motes, wherein different motes sense different types of information (Mulgund, par. [0026]).”

Examiner’s *Office Action*, p. 20 (25 August 2010).

Although Examiner states “Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers].,” Applicant has pointed out above that Examiner has not yet engaged in the broadest reasonable interpretation framework regarding Clause [b], and accordingly has yet to consider at least the **“report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity,”** (Emphasis added) recitations of Clause [b]. Accordingly, until Examiner has supported his statement under the broadest reasonable interpretation framework Applicant here returns to the express language of the claim and thus respectfully points out that Applicant has reviewed the Ahmed reference identified by Examiner, and so far as Applicant can discern, Ahmed does not recite “report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity,” as recited in Clause [b] of Applicant’s amended Independent Claim 26. Rather, the textual portions of Ahmed cited by Examiner actually recite as follows:

To facilitate the control over various aspects of a building, control systems employ sensing devices that measure various conditions, such as temperature, air flow, or motion. Other sensors determine the presence of smoke, the presence of dangerous or noxious

chemicals, light and the like. Sensor devices for use in building control systems can vary widely in function, size and cost. Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.

See *Ahmed* [0006] (Emphasis Added)

As can be seen from the foregoing, the Examiner-identified portions of Ahmed do not recite the text of at least Clause [b] of Independent Claim 26: “at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index stored in a **first mote of a first set of motes** administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.” Instead, Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” (Ahmed paragraph [0006]) Consequently, on its face, Ahmed does not show the cited text of Independent Claim 26.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Madden, Mulgund, or Woo describes or teaches the text of Clause [b] of Independent Claim 26. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 26 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 26 and the Examiner-cited Mulgund, Madden and Ahmed references are very different on their faces. . Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the Examiner-cited art is very different from Claim 26, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 26 either under the MPEP or under controlling legal standards.

As can be further seen from the foregoing, the Examiner-identified portions of Madden and Woo do not recite the text of at least Clause [b] of Independent Claim 26: “**at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to **report at least a part of a multi-mote content index stored in a first mote of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.****” (Emphasis added) Instead, Madden recites “Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent.” And Ahmed recites “Many sensors include mechanical, electromechanical and electronic elements and thus include a significant amount of parts that must be manufactured and assembled. In many cases, a building will have sensor devices from multiple manufacturers that provide different types of output signals.” (Ahmed paragraph [0006]) Consequently, on its face, Madden and/or Ahmed do not show the text of at least Clause [a] of Independent Claim 26.

Accordingly, insofar as that Madden does not recite the text of Clause [b] of Applicant’s Independent Claim 26, and insofar as that Examiner has provided no

objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Madden could be modified/combined to teach at least Clauses [b] of Independent Claim 26, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 26 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 26 allowable and to issue a Notice of Allowability of same.

Notwithstanding the fact that significant *prima facie* differences exist between Madden and Applicant's Claim 26, Applicant points out that Examiner has not provided evidence in support of Examiner's allegations as to what Madden and/or Ahmed "teaches." Examiner speaks of "complete TinyOS application component graph" of Madden allegedly that "facilitates routing data from child device to a parent device." Examiner's Office Action, p. 20-21 (25 August 2010). Examiner speaks of "Ahmed teaches motes [sensors] that provide different types of output signals being owned by different business entities [different manufacturers]." Examiner's Office Action, p. 20-21 (25 August 2010) Applicant has reviewed the Madden and the Ahmed reference and cannot find any recitation of an "report at least a part of a multi-mote content index stored in a first mote of a first set of motes." in the mote description. If Examiner desires to maintain the rejection, therefore, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner's currently unsupported assertions regarding what Madden "teaches" and/or should be interpreted to "teach."

With respect to Examiner assertions regarding the teachings of Madden and/or Mulgund and/or Ahmed, Applicant demonstrated above that the express recitations of Madden and/or Mulgund and/or Ahmed are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Madden and/or Mulgund and/or Ahmed "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Madden teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if

Examiner's assertions regarding the teachings of Madden were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Madden to the actual express language of Applicant's amended Independent Claim 26. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

**(5) Examiner Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund, Madden and Ahmed actually recites, the question thus naturally arises as to how Examiner could see Mulgund, Madden and Ahmed as "teaching" something related to Clause [b] of amended Independent Claim 26. Applicant respectfully points out that the Applicant's Application is the only objectively verifiable Examiner-cited document of record that shows or suggests what Examiner could purport the references to teach. From this and the express recitations of Mulgund, Madden and Ahmed as set forth, it follows that Examiner would be interpreting Mulgund, Madden and Ahmed through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, Examiner's proposed assertions regarding Mulgund, Madden and Ahmed would be untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 26 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as Examiner has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of Examiner assertions regarding what the technical material cited by Examiner "teaches," Applicant infers that the Examiner is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what

the cited technical material “teaches.” In view of the foregoing, if Examiner desires to maintain the rejection, in the next communication, Applicant respectfully requests that the Examiner provide an affidavit or declaration setting forth objectively verifiable evidence in support of Examiner’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

**2. Amended Dependent Claims 27-29 and 36-38: Patentable for at Least Reasons of Dependency from Independent Claim 26.**

Amended Claims 27-29 and 36-38 depend either directly or indirectly from Independent Claim 26. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 27-29 and 36-38 are patentable for at least the reasons why Independent Claim 26 is patentable. Accordingly, Applicant respectfully requests that Examiner hold amended Dependent Claims 27-29 and 36-38 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

**IV. REJECTION ARGUMENT: THE OFFICE ACTION ERRED IN REJECTING CLAIMS 5, 13-25, 30, 33, AND 36 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH**

The Examiner has stated Claims 5, 13-25, 30, 33, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement by containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, as the time the application was filed, had possession of the claimed invention.

In response, Applicants respectfully assert herein that, under the MPEP and legal standards for patentability as set forth below, does not establish a prima facie case that Applicants’ claims at issue fail to comply the requirements of 35 U.S.C 112. Specifically,

Applicants respectfully show below that Applicants' claims at issue as amended, comply with the enablement requirements. Accordingly, Applicants respectfully request that the Examiner withdraw the rejections and hold all claims to be allowable over the art of record.

Claim 5 recites:

5. The method of claim 1, wherein said transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes further comprises:

obtaining access to the one or more mote-addressed content indexes of the first set of motes, wherein the mote-addressed content indexes of the first set of motes comprises addresses of a plurality of motes in the first set of motes. (Emphasis added)

With respect to claim 5, the Examiner has stated,

"As to claim 5, the claim recites "the mote-addressed content indexes of the first set of motes comprises addresses of content stored in a memory in the first set of motes".

Examiner has reviewed applicant-cited portion of the specification and is unable to locate a recitation of or a proper support for indexes comprising addresses of content stored in memory."

*Examiner's Office Action*, pp. 8-9 (25 August 2010).

Support for "addresses of a plurality of motes" is found in the specification at least on Figs. 5 and 6. Thus, claims 5 complies with the requirements of 35 U.S.C. 112, first paragraph.

Amended Claim 13 recites:

13. A system comprising:

a device coupled with a first mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, wherein the first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.

With respect to claim 13, the Examiner has stated,



“As to claim 13, the claim has been amended to recite "a device controlled by a second mote". Examiner has reviewed applicant-cited portion of the specification and is unable to locate a recitation of a device controlled by a second mote to transmit content index.”

*Examiner's Office Action*, p. 7 (25 August 2010).

Support for “a device coupled with a second mote” is found in the specification at least on page 7, first full paragraph. Thus, claims 13 complies with the requirements of 35 U.S.C. 112, first paragraph.

Claim 14 has been cancelled

Amended Claim 25 recites:

25. A system comprising:

a first mote; and

means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes administered by a first network administrator owned or controlled by a first business entity to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, the transmitted aggregate of one or more mote-addressed content indexes of the first set of motes excluding mote-addressed content of the first set of motes, and said means for transmitting being disposed proximate to said first mote.

With respect to claims 25, 30, 33, and 36, the Examiner has stated,

“As to claim 25, the claim recites "the transmitted aggregate of one or more mote addressed content indexes of the first set of motes excluding mote-addressed content indexes of the second mote". Examiner has reviewed applicant-cited portion of the specification and is unable to locate a recitation of or a proper support for the transmitted aggregate excluding mote-addressed content indexes of the second mote.

Claims 30, 33, and 36 are rejected for analogous reasons as those discussed just above with respect to claim 25.”

*Examiner's Office Action*, p. 9 (25 August 2010).

Claim 25 has been amended to remove the recitation of “excluding mote-addressed content indexes” thereby rendering the rejection moot.

Accordingly, under the 112 standards, the Examiner has not established a *prima facie* case that pending claims 5, 13-25, 30, 33, and 36 as presented do not comply with the requirements to distinctly claim the subject matter the applicant regards as the invention. Applicant respectfully asks Examiner to hold claims 5, 13-25, 30, 33, and 36 allowable and to issue a Notice of Allowance of same.

## **V. REJECTION OF CLAIMS 1-42 UNDER 35 U.S.C. §112, SECOND PARAGRAPH**

The Examiner rejected Claims 1-42 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appellant traverses this rejection, and respectfully requests that the Examiner withdraw his rejection of claims 1-42 under 35 U.S.C. §112, second paragraph.

### **1. Claims 1, 13 and 25 (and their dependent claims)**

With respect to claims 1, 13 and 25, the Examiner has stated:

As to claims 1, 13, and 25, the claim recites a "second mote". It is unclear which mote is a "first mote" such that the second mote can be numerically identified as "second".

*Examiner's Office Action*, p. 9 (25 August 2010).

Claims 1, 13 and 25 have been amended to replace second mote with first mote thereby rendering the rejection Moot. Appellant respectfully requests that the Examiner's withdraw his rejection of claims 1, 13 and 25 (and their dependent claims) under 35 U.S.C. §112, second paragraph.

### **2. Claims 4 and 15**

With respect to claims 4 and 15, the Examiner has stated,

As to claim 4, it is unclear whether "reporting entity" is the same as "aggregator" of claim 1. It appears that claim 4 further defines the limitation of "transmitting to an aggregator" by reciting "transmitting to reporting entity" which suggests that reporting entity is the aggregator.

Usage of inconsistent terminology when referring to same elements in the claim is ambiguous.

As to claims 14 and 15, it is unclear whether "means for transmitting" are the "device controlled by a second mote to transmit" of claim 13. The claim is ambiguous because it appears that there are two separate entities (a device and means for transmitting) that perform the same functionality of transmitting. Appropriate correction or explanation is required.

*Examiner's Office Action*, p. 10 (25 August 2010).

Claims 4 and 15 as amended recite:

4. The method of claim 1, wherein said transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes further comprises:

transmitting part of the aggregate of one or more mote-addressed content indexes of the first set of motes to the aggregator.

15. The system of claim 13 wherein the device coupled with the first mote to transmit at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes further comprises:

means for transmitting at least a part of a mote-addressed routing/spatial index.

Claims 4 and 15 have been amended to remove the unclear recitation. As the plain meaning indicated terms of amended claim 4 and 15 would be understood by one of skill in the art, Appellant respectfully requests that the Examiner's withdraw his rejection of claims 4 and 15 under 35 U.S.C. §112, second paragraph.

## **VI. CONCLUSION**

Applicant may have during the course of prosecution cancelled and/or amended one or more claims. Applicant notes that any such cancellations and/or amendments will have transpired (i) prior to issuance and (ii) in the context of the rules that govern claim interpretation during prosecution before the United States Patent and Trademark Office (USPTO). Applicant notes that the rules that govern claim interpretation during prosecution form a radically different context than the rules that govern claim interpretation subsequent to a patent issuing. Accordingly, Applicant respectfully submits

that any cancellations and/or amendments during the course of prosecution should be held to be tangential to and/or unrelated to patentability in the event that such cancellations and/or amendments are viewed in a post-issuance context under post-issuance claim interpretation rules.

Insofar as that the Applicant may have during the course of prosecution cancelled/amended claims sufficient to obtain a Notice of Allowability of all claims pending, Applicant may not have during the course of prosecution explicitly addressed all rejections and/or statements in Examiner's Office Actions. The fact that rejections and/or statements may not be explicitly addressed during the course of prosecution should NOT be taken as an admission of any sort, and Applicant hereby reserves any and all rights to contest such rejections and/or statements at a later time. Specifically, no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended (e.g., with respect to any facts of which Examiner took Official Notice, and/or for which Examiner has supplied no objective showing, Applicant hereby contests those facts and requests express documentary proof of such facts at such time at which such facts may become relevant). For example, although not expressly set forth during the course of prosecution, Applicant continues to assert all points of (e.g. caused by, resulting from, responsive to, etc.) any previous Office Action, and no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended. Specifically, insofar as that Applicant does not consider the cancelled/unamended claims to be unpatentable, Applicant hereby gives notice that it may intend to file and/or has filed a continuing application in order prosecute such cancelled/unamended claims.

Should this case go to appeal, Applicant reserves the right to submit argument, rebuttal evidence, or legal authority in the instance the Board of Patent Appeals and Interferences finds that the Examiner has met his burden in establishing a *prima facie* case of unpatentability of the various appealed claims. Applicant further reserves the right to submit argument, rebuttal evidence, or legal authority if new claim interpretations or definitional citations are raised on appeal. The fact that argument, rebuttal evidence, or legal authority may not have been explicitly discussed during the course of prosecution should NOT be taken as an admission or waiver of any sort, and Applicant hereby reserves any and all rights to discuss (e.g. make explicit, produce, or explain) such

rebuttal evidence at a later time.

The Examiner is encouraged to contact the undersigned by telephone at 206-321-9072 to discuss the above and any other distinctions between the claims and the applied references, if desired. Also, if the Examiner notes any informalities in the claims, he is encouraged to contact the undersigned to expediently correct such informalities.

Respectfully submitted,

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